1882MNRAS..43...22E

my observing the comet on the meridian. In the afternoon I watched the comet with the 6-inch equatorial, and power 110, using a neutral-tint wedge on account of the glare of the Sun. I did not expect that the comet would reach the Sun before night, but they were rapidly approaching one another, and about 4·40 p.m. I found the Sun's limb visible at the edge of the field. The silvery light of the comet presented a striking contrast to the reddish-yellow of the Sun; the tail could only be traced to a very short distance now. After waiting some minutes I was about to observe differences of R.A., but the increasing rate at which the comet was closing up rendered it certain that it would reach the Sun in a very short time. By keeping the Sun's limb at the edge of the field I was able to follow the comet continuously right into the boiling at the limb. I lost sight of it suddenly at

$$\overset{\text{h}}{4}\ \overset{\text{m}}{50}\ \overset{\text{s}}{58}\ \text{Cape M.T.},$$

when the Sun's limb was boiling all about it. I fancied I caught a glimpse of it 3^s later, but was not sure. I then examined the Sun's disk very carefully, but could not see the slightest trace of the comet. I swept round the limb before the Sun disappeared behind the Lion Hill, but saw nothing. The sun was then very low and the definition bad.

Two measures with the micrometer about half an hour before the disappearance gave 4″ for the diameter of the comet's disk.

Royal Observatory, Cape of Good Hope:
1882, *Oct.* 9.

Observations of the Great Comet (b) 1882. By W. L. Elkin, Ph.D.

(*Communicated by Mr. Gill.*)

My first view of the comet was on Sept. 8. It then appeared to the unassisted eye about as bright as a star of the third or fourth magnitude, with a straight tail about 2½° in length. The position angle of the tail, as measured at its origin with the heliometer at 4^h sidereal time, was 253°·1. The breadth of the coma at the nucleus was estimated at 40″ to 50″, the nucleus itself being a nebulous mass strongly condensed in the centre, some 10″ or 15″ in diameter, and admitting of very accurate observation with the heliometer as such. The southern edge of the tail was sharply defined for a considerable distance, but the northern one faded away some 12′ to 15′ from the head. The colour of the comet's light struck me as remarkably *white*, perhaps contrasting it from recollection with comet *Wells*, which was of a brilliant golden hue.

The morning sky was always completely clouded (with the exception of some momentary breaks, Sept. 9 and 15) till

1882MNRAS..43...22E

Sept. 16, when a minute or two of clear sky enabled the comet to be brought into the field of the heliometer, and throughout the day it was always a brilliant object in the telescope whenever free from clouds, and this without the slightest precautions being necessary. The forenoon was very cloudy, and only a few pointings with the great Indian theodolite were obtained; after meridian passage it was more favourable. As the comet approached the Sun in the afternoon I made unsuccessful attempts to measure its position with the heliometer from the Sun's limb; it could then only be seen with a low power (60), and disappeared on being brought up to the limb when still at some distance from this latter. Screening down the Sun with wire gauze screens was tried, but the amount of false light thereby produced rather impeded than forwarded the visibility of the comet in the Sun's vicinity; it soon, however, became apparent that the comet would be followed up close to the Sun, as seen directly through one of the half lenses, and favoured by the clouds I actually observed it to disappear among the undulations of the Sun's limb at

$$\overset{h}{4}\ \overset{m}{50}\ \overset{s}{52}\ \text{Cape M.T.,}$$

the observation being considered at the time as accurate as an occultation of a star, say of the fourth magnitude, at the bright limb of the full Moon. The moment noted was when the last trace of the comet was suspected amidst the boiling of the limb: 4^s before it was still plainly visible. The undulations were, however, already some 5″ in magnitude, and the comet was probably still some fraction of this distance from the Sun's true limb. The observation was made with one of the half lenses of the heliometer, and a piece of cardboard was placed in the focus of the telescope, covering one-half of the field, so that but a small segment of the Sun was visible, but this in the centre of the field. A red glass sunshade was used, and it appeared to me that the intrinsic brilliancy of the nucleus, and of a small portion of the emanations from it, could scarcely have been inferior to that of the Sun's surface itself.

Immediately after noting the times, I changed the low power (60) with which the previous observation was made for one of 180, and carefully scrutinised the place where the comet had disappeared, and its probable path, for about a quarter of an hour without being able to detect any traces of a body, dark or bright, on the face of the Sun. The definition was, however, with increasing zenith distance, becoming worse and worse, and I noted at the time that possibly an object of an apparent diameter of 1″ or less might have escaped unnoticed, to which I may add that at the time of disappearance at the limb the nucleus was estimated to be still some 5″ in diameter.

At that time it was not possible to say with any certainty whether the comet was passing behind the Sun, or between us

1882MNRAS..43...22E

and the Sun, the available observations not admitting of any reliable conclusions being deduced from them. As this latter proved to have been the case, the fact of a comet's invisibility on the Sun's face, to ordinary instrumental means at least, lends an additional interest to the observation. I hope, however, in America, with a higher Sun, the rare occasion will not have been lost.

The post-perihelion development of the comet has been replete with interest, and of great grandeur, and has been followed with as much assiduity as the exceptionally unfavourable weather would permit.

Elements of the Great Comet (b) 1882. By W. H. Finlay, B.A., and W. L. Elkin, Ph.D.

T	Sept. 17·2242, G.M.T.	
ω	69° 32′ 8″	Mean Equinox 1882·0.
☊	345 59 35	
ι	141 58 59	
log q	7·888881	

These elements are founded on two meridian observations on Sept. 17, 22, and extra-meridian ones on Sept. 28, aberration and parallax being taken into account. They represent the middle place and two other observations as follows :—

	Comp. – *Obs.*	
	$d\lambda$	$d\beta$
Sept. 8	−8″	−20″
22	0	+ 5
Oct. 3	0	+24

They also give for the distance of the comet from the centre of the Sun at the moment when we saw it disappear at the limb on the afternoon of Sept. 17 :—

963″·2,

which is only 5″·5 in excess of the tabular value of the Sun's semi-diameter.

The outstanding errors in the extreme latitudes are certainly greater than the uncertainties in the star places or in the observations will account for, and seem to point to a slight insufficiency of the parabolic hypothesis.

It will be seen at once that the elements bear a strong resemblance to those of the great comets of 1843 and 1880. In physical appearance, however, this comet differs totally from that of